

**Before the
Federal Communications Commission
Washington, D.C. 20554**

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| In the Matter of |) | |
| |) | |
| Technological Transition of the Nation's Communications Infrastructure |) | GN Dkt. No. 12-353 |
| |) | |
| Technology Transitions Policy Task Force |) | GN Dkt. No. 13-5 |
| |) | |
| Connect America Fund |) | WC Dkt. No. 10-90 |

COMMENTS OF HYPERCUBE TELECOM, LLC

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EXECUTIVE SUMMARY

HyperCube Telecom, LLC, supports, in part, AT&T's request that the Federal Communications Commission ("FCC") conduct trials of all-Internet Protocol ("IP") telecommunications services environments. Such trials should, however, be conducted using the "smart regulation" approach advocated by NTCA, and they should involve the full range of service providers, call flows, and technologies (including trials of IP interconnection in AT&T's wireless offices). The objective of any trials must be to ensure that an evolution to IP-based technology does not interfere with the FCC's and the States' ability to implement the statutory framework (including Sections 214, 251, and 252 of the Communications Act)¹ designed by Congress to ensure that high quality services are made universally available to the public in a competitive marketplace, and to ensure that no segment of the public is deprived of the services on which they have come to depend. The focus should be on determining how all aspects of the technical transition affect consumers and businesses, and competitors serving those customers and businesses, not on trying to demonstrate to Congress or to regulators that AT&T should be relieved of regulatory obligations.

No trial situations can be expected to address every possible scenario that could occur with respect to IP interconnection. However, the trials must be of sufficient scope to provide reliable information that can be applied to refine the regulatory framework and interconnection requirements to accommodate the IP transition generally, rather than only the limited situations directly involved in the trials. The Commission's Technology Transitions Policy Task Force and

¹ HyperCube is not here advocating that all Title II regulation should be applied to IP-based services. Interconnection rights and obligations, however, are essential to maintain the competitive marketplace that maximizes consumer choice.

Technological Advisory Council can play an important role in designing effective trials and identifying the critical regulatory and technical issues to be examined.

The Commission should ensure that it receives input from a broad category of participants when designing the trials, and that the actual trials cover all sizes and types of ILEC offices and involve all types of industry players, including AT&T wireless offices (where to date AT&T Mobility is permitting non-affiliates, including intermediate carriers, IP interconnection only via use of a purchased AT&T ILEC wholesale offering, AVOICS, that includes invoicing and other “features” irrelevant to intermediate carriers). The experiments will be more useful the more they focus on determining the types of, and finding solutions for, issues that can impede effective, competitively neutral interconnection of networks. It is crucial that the trials identify all principal issues that may deprive the public of the benefits of the competitive marketplace the statutory framework is designed to promote, and that preventive steps and solutions be made central to interconnection policies and rules. Such issues include the lack of standardization for signaling protocols. Indeed, there is a lack of consensus even as to whether to develop such signaling standards for IP environments.

The trials must incorporate established interconnection rights and obligations to draw a broad range of participants and replicate real-world scenarios. Implementation of objective standards for interconnection will facilitate carrier negotiations. Finally, to protect the public and the competitive marketplace, the trials should be established as reversible experimental situations. They should not be intended to make permanent changes in interconnection arrangements at the trial offices. From the start, it must be clear that the trials will not be used as an opportunity for a fast end-run around interconnection, signaling, and universal service obligations.

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COMMENTS OF HYPERCUBE TELECOM, LLC

HyperCube Telecom, LLC (“HyperCube”) files these comments in response to the *Public Notice*¹ of the Federal Communications Commission (“FCC” or “Commission”) seeking comment on the Petitions recently filed by AT&T² and the National Telecommunications Cooperative Association.³ As summarized by the *Notice*, the *AT&T Petition* requests that the Commission “consider conducting trials where certain equipment and services are retired and IP-based services are offered.”⁴ The *NTCA Petition* requests that “the Commission ‘initiate a rulemaking to examine the means of promoting and sustaining the ongoing evolution of the

¹ *Pleading Cycle Established on AT&T and NTCA Petitions*, Public Notice, GN Dkt. No. 12-353, DA 12-1999 (rel. Dec. 14, 2012) (“*Public Notice*”).

² *AT&T Petition to Launch a Proceeding Concerning the TDM-to-IP Transition* (filed Nov. 7, 2012) (“*AT&T Petition*”).

³ *Petition of the National Telecommunications Cooperative Association for a Rulemaking to Promote and Sustain the Ongoing TDM-to-IP Evolution* (filed Nov. 19, 2012) (“*NTCA Petition*”).

⁴ *Public Notice* at 1.

Public Switched Telephone Network’ from TDM to IP.”⁵ While HyperCube generally supports the experimental approach of holding trials of an IP-based services environment, HyperCube also agrees with NTCA that the Commission cannot abandon its technology-neutral⁶ statutory obligation to regulate in the public interest, and that the Commission should implement a “smart regulation” approach to the changing communications environment.⁷ In fact, just like the MF to SS7 migrations in the past, TDM-to-IP interconnection migrations should be treated as a transport / interconnection change, not as a piece of magic that erases all previous obligations.

INTRODUCTION

HyperCube is a leading competitive local exchange carrier (“CLEC”) offering, among other services, wholesale intermediate services that are technology-agnostic and allow the seamless transmission of communications between providers, regardless of their service offerings or the technologies they deploy. With such a focus, and with substantial expertise gained through tackling the challenging technical and regulatory issues raised by the ongoing changes in the communications marketplace, CLECs such as HyperCube have a vital role to play in “promoting and sustaining” the TDM-to-IP evolution.

⁵ *Id.*

⁶ See *NTCA Petition* at 4 (core objectives of the Communications Act “must apply with equal force whether services are rendered through Class 5 TDM switches and copper networks or routers, softswitches, and cutting-edge fiber or wireless solutions.”).

⁷ See *NTCA Petition* at 9 (“It is essential therefore to adopt a more thoughtful and balanced approach to regulatory reform and promoting an IP evolution than engaging simply in either unfettered deregulation (which may create a ‘Wild West’ that scares off investment) or rote mechanical application of legacy regulations (which may deter investment as circumstances evolve).”). Cf. *AT&T Petition* at 7 (regulators should start with a presumption of zero regulation).

As the Chairman has emphasized, “[t]he . . . fundamental policy question for communications in the 21st century . . . [is] . . . how can we best ensure that our nation’s communications policies continue to drive a virtuous cycle of innovation and investment, promote competition, and protect consumers?”⁸ Having previously adopted the recommendations of the *National Broadband Plan* to provide a roadmap for broadband deployment nationwide,⁹ the Commission must now develop a regulatory framework for the marketplace evolution, consistent with the requirements of the Communications Act:

Technological transitions don’t change the basic mission of the FCC. But technology changes can drive changes in markets and competition. And many of the Commission’s existing rules draw technology-based distinctions. So the ongoing changes in our nation’s communications networks require a hard look at many rules that were written for a different technological and market landscape.¹⁰

⁸ FCC News, “FCC Chairman Julius Genachowski Announces Formation of ‘Technology Transitions Policy Task Force’” (released Dec 10, 2012) (“*Task Force Announcement*”); see also, J. Phillips and M. Schwartz, COMMDAILY, *AT&T Plans \$14 Billion Wireline/Wireless Broadband Expansion*, Nov. 8, 2012 (“*CommDaily AT&T Article*”) (“[I]n our ongoing work to modernize our rules for the evolving communications market . . . we will focus on the principles that have guided our actions since I became Chairman: driving the virtuous cycle of private investment and innovation in the broadband ecosystem, promoting competition, and protecting consumers.”). Cf. E. Vos, Vint Cerf: There was More Competition During the ‘Dial-up’ Days, MuniWireless, *available at* <http://www.muniwireless.com/2013/01/09/vint-cerf-more-competition-during-dialup-days/> (Jan. 9, 2013) (last visited Jan. 25, 2013) (quoting Vinton Cerf who said, “[g]etting access to competition to discipline the market and give you choice is still an important consideration.”).

⁹ Omnibus Broadband Initiative, *Connecting America: The National Broadband Plan* at 59, GN Dkt. No. 09-51 (rel. Mar. 16, 2010) (“*National Broadband Plan*”). See, e.g., *id.* at 49 (“For competition to thrive, the principle of interconnection—in which customers of one service provider can communicate with customers of another—needs to be maintained.”).

¹⁰ *Task Force Announcement* at 1 (quoting Chairman Genachowski). Cf. *NTCA Petition* at 9 (simplistic approach of applying current regulatory scheme in its entirety “would fail to engage in a necessary examination of whether consumer needs, technological change, or other market conditions should drive regulatory change.”).

As NTCA pointed out, any rulemaking addressing the evolution of telecommunications services from TDM-to-IP must begin with the FCC’s core statutory mandate “to make available . . . to all the people of the United States . . . a rapid, efficient, Nation-wide, and world-wide wire and radio communication service with adequate facilities at reasonable charges.”¹¹ This broad Congressional imperative, rather than being technology-specific, encompasses at the minimum all wire and radio communications services.

The trials suggested by AT&T and others¹² can be useful experiments that provide valid data to inform the Commission’s decision-making, provided that the trials are designed, with broad public participation, to make them—and their attendant complexities and consequences—representative of many of the real-life situations that will arise during the course of the ongoing transition from TDM to IP services.

A key objective of any trials must be to ensure that an evolution to IP-based technology does not interfere with the FCC’s and the States’ ability to implement the statutory framework (including Sections 214, 251, and 252 of the Communications Act)¹³ designed by Congress to ensure that high quality services are made universally available to the public in a competitive

¹¹ *NTCA Petition* at 4 (citing 47 U.S.C. § 151). The Commission has previously recognized that its “first performance goal is to preserve and advance universal availability of voice service,” *In the Matter of Connect America Fund, Report and Order and Further Notice of Proposed Rulemaking*, 26 FCC Rcd 17663, ¶ 49 (2011) *pets. for review pending sub nom. In re: FCC 11-161, No. 11-9900* (10th Cir. filed Dec. 8, 2011) (“*USF/ICC Transformation Order*”); *see also id.* at ¶ 82 (rejecting requests to preempt state-mandated voice service requirements).

¹² Letter from Richard Shockey, Shockey Consulting, to Ms. Marlene H. Dortch, Secretary, FCC, GN Dkt No. 13-5 (filed Jan. 16, 2013) (“*Shockey Ex Parte*”); Letter from Brian Scarpelli, Telecommunications Industry Association, to Marlene H. Dortch, Secretary, FCC, GN Dkt No. 12-353 (filed Jan. 11, 2013) (“*TIA Ex Parte*”).

¹³ HyperCube is not here advocating that all Title II regulation should be applied to IP-based services. Interconnection rights and obligations, however, are essential to maintain the competitive marketplace that maximizes consumer choice.

marketplace, and that no segment of the public is deprived of the services on which they have come to depend. The focus should be on determining how all aspects of the technical transition affect consumers and businesses, and competitors serving those customers and businesses, not on trying to demonstrate to Congress or to regulators that AT&T should be relieved of regulatory obligations.

HyperCube's specific recommendations are intended to promote broad-based trials with the potential to provide reliable information to assist the FCC and the States in formulating policies, consistent with the mandate of the Communications Act, that will promote the wide availability of high quality broadband and advanced telecommunications services to all citizens through a competitive marketplace that encourages investment and innovation by a wide variety of providers.

DISCUSSION

Before the trials begin, the Commission should seek input from all stakeholders to ensure that the trials are designed to provide relevant information useful in resolving the critical technical and regulatory challenges posed by the evolution of the communications environment from one that is TDM-based to one in which IP-based services predominate. Although it would be impossible for the trials to cover every conceivable situation, they will provide no information useful to general rulemaking if either the types of participants or the types of carrier offices are limited. Nor can the trials operate in a regulatory vacuum that ignores the statutory interconnection rights and obligations imposed by the Communications Act, regardless of the technology deployed in a given telecommunications service.

The Commission, working with the States and the industry as a whole, not just with AT&T, must set ground rules that encourage participation by a variety of types of carriers and

that take into account the vast differences in circumstances among types of carrier offices. The trials should be intended to be clinical experiments. The trials should not be a pretext for rapid, permanent changes unilaterally benefiting AT&T by eliminating regulatory oversight by federal and state regulators in central offices of AT&T's choice.¹⁴ The Commission's goal should be the "smart" regulation urged by NTCA,¹⁵ not elimination of regulation for its own sake, or for AT&T's sake.¹⁶ The following guidelines should assist the Commission in structuring effective trials that will be useful experiments addressing a multiplicity of technical and regulatory issues.

A. Broad Participation in Planning the Trials Is Essential.

HyperCube recommends that the Commission begin by giving a joint remit to its Technology Transitions Policy Task Force ("Task Force") and the FCC's Technological Advisory Council ("TAC") to identify the key regulatory and technical issues, such as signaling protocols, raised by even experimental trials of all-IP ILEC central offices, and to suggest options for resolving them.¹⁷ The Commission could then schedule a hands-on workshop where

¹⁴ Cf. Letter from Charles Acquard, NASUCA, *et al.*, to Ms. Marlene H. Dortch, Secretary, FCC, WC Dkt. No. 10-90, *et al.* at 4-5 (Nov. 20, 2012) ("*NASUCA Ex Parte*") (asserting that AT&T seeks to abandon their copper networks and their Carrier of Last Resort ("COLR") obligations to offer basic voice service); *id.* at 6 (asserting AT&T seeks to end network unbundling obligations, which would jeopardize existing non-cable competition).

¹⁵ *NTCA Petition* at iii (subjecting existing regulatory regime to "thoughtful examination and targeted changes").

¹⁶ *NASUCA Ex Parte* at 2 (consumers would be harmed by implementation of AT&T's proposal intended to support AT&T's "self-focused business model."). The Commission should be particularly watchful in light of AT&T's long history of competitive abuses. *See, e.g., United States v. AT&T*, 552 F. Supp. 131 (D.D.C. 1982) (Modification of Final Judgment), *aff'd sub nom. Maryland v. United States*, 460 U.S. 1001 (1983); *see also* "History: AT&T Antitrust," Cybertelecom Federal Internet Law & Policy, *available at* http://www.cybertelecom.org/notes/att_antitrust.htm (last visited Jan. 25, 2013) (summarizing history of antitrust litigation against AT&T).

¹⁷ This is consistent with the designated role of the Task Force to "coordinate the Commission's

all stakeholders could jointly tackle these problems. Participants would include a wide range of industry players (including all types of service providers, equipment manufacturers, and trade groups), state¹⁸ and federal regulators, technical organizations, and representatives of businesses and consumers.¹⁹ The workshop would develop regulatory and technical proposals for conducting un-biased, experimental trials of the way such critical functions as interconnection and signaling would work in an all-IP environment. These proposals would then be subject to public comment before the Commission published a final trial design.

While this process would take some time, the important preliminary work by the Task Force, TAC, and workshop should solicit focused public comments and ultimately streamline the process of developing the trial procedures. The opportunity for direct involvement by all types of interested parties should ensure that the chosen trial situations provide useful information, and that the expenditure of time and resources is worthwhile. Such a transparent, fully participatory process for designing the trials should also inspire confidence in their conduct and in their results.

efforts on IP interconnection” and to “consider recommendations from the Technological Advisory Committee on the PSTN Transition.” *Task Force Announcement* at 1. *Cf. AT&T Petition* at 6 (ILECs to propose wire centers and identify TDM-IP transition steps, with public comment only on “how best to remove the legal and regulatory impediments to the trial itself and the ultimate transition to all-IP networks and services.”).

¹⁸ *Cf. NTCA Petition* at 4 (“[I]t is essential both as a matter of sound public policy and legal authority for the Commission to coordinate its analysis of next steps in a PRCN [Public Routed Communications Network] world with state regulators, as they are closest to the consumers, retain jurisdiction over intrastate services, and can help tailor solutions and tackle the challenges of fulfilling universal service and promoting competition on a localized basis.”).

¹⁹ NASUCA, for example, has a very different “affirmative proposal” than AT&T for regulatory reform during the evolution from TDM to IP services. *See NASUCA Ex Parte* at 9.

B. Resolving Signaling and Other Critical Technical Issues Must Be a Focus Before and During the Trials.

However eager AT&T may be to jettison important regulations, throw away its old equipment, and offer only services that AT&T claims to be new,²⁰ few other ILECs would have AT&T's ability or financial resources to flash-cut to an all-IP environment.²¹ To ensure the continuation of the competitive marketplace that has protected consumers from the loss of essential services²² while bringing new service innovations, the Commission must focus on resolving critical technical issues that complicate both IP-to-IP interconnection and interconnection and service delivery in the mixed TDM/IP environment that will be the norm for some time to come.²³ For example, many modem-based consumer services will not work in a TDM/IP environment because the hand-off protocols do not match.²⁴

As an intermediate services provider, HyperCube uses both TDM and IP protocol equipment and has significant and ongoing first-hand experience in tackling the complex technical as well as regulatory issues involved in TDM-IP interconnection. HyperCube has been

²⁰ See *CommDaily AT&T Article*; *AT&T Petition* at 8; see also Letter from Frank S. Simone, AT&T, to Ms. Marlene H. Dortch, FCC, GN Dkt. No. 12-353, *et al.* at 2 (filed Jan. 15, 2013) (“*AT&T Ex Parte*”) (billion dollar investments intended to *eliminate* any stand-alone network).

²¹ See *NTCA Petition* at 2-3 (discussing investment in new technologies by small ILECs as part of on-going “evolution of the PSTN – a technology shift within a network (or, really, a series of interconnected networks”); *NASUCA Ex Parte* at 6 (TDM services not offered over different network from IP services – large portion of existing transmission network used and usable for both).

²² See *USF/ICC Transformation Order* at ¶ 49 (priority is preserving voice services).

²³ AT&T also ignores that much of the world is moving much more slowly in the evolution to IP technology. Our global economy, and the successful export of democratic ideals, depends in large part on global communications, communications that cannot be hamstrung by unilateral carrier decisions to discontinue services or interconnection with other providers.

²⁴ Examples of such services are household alarm systems, personal lifeline medical alarms, credit card processing machines at gasoline pumps, fax machines, and ATM machines.

a strong proponent of improved call signaling rules,²⁵ yet, like multiple other carriers,²⁶ HyperCube has had to request a limited waiver of the Commission's new rules because the required signaling information is unavailable from upstream providers, despite efforts to supplement the data through agreements to populate the JIP and other parameters. With respect to IP and SIP signaling, there remains no industry consensus on standards for the interface between TDM-based and IP-based services, or even between different IP-based services.²⁷

Exacerbating the problem, there are no standards-setting bodies in the VoIP world similar to ATIS for the switched environment. Further, studies are at a critical standstill as the dominant players in ATIS and other bodies, including AT&T, are no longer particularly interested in developing neutral protocols for universal application with respect to IP. There may be some preliminary proposals issued by a few volunteer study groups, but their recommendations are tentative and more often ignored than followed. No organization has a mandate or deadline for promulgating standards to be universally implemented by VoIP providers. Rather than promulgating mandatory, unambiguous standards, the IP community uses a system of circulated "public ideas" or suggestions called "RFCs" (Requests for Comments).²⁸ These documents represent a communal attempt at achieving consensus, but they use indefinite, equivocal terms such as "may," rather than using mandatory language such as "must." The result is that even parties purporting to adopt the same voluntary RFC often interpret it differently, complicating

²⁵ See, e.g., *Comments of HyperCube Telecom, LLC* at 13, 21, WC Dkt. No. 10-90, *et al.* (filed Apr. 1, 2011).

²⁶ See, e.g., AT&T Petition for Limited Waiver, WC Dkt. No. 10-90, *et al.* (filed Dec. 29, 2011); CenturyLink, Inc. Petition for Limited Waiver, WC Dkt. No. 10-90, *et al.* (filed Jan. 23, 2012) (seeking waivers of the new call signaling rules).

²⁷ See *Comments of HyperCube Telecom, LLC*, WC Dkt. No. 10-90 (filed Feb. 24, 2012) ("*HyperCube FNPRM Comments*").

²⁸ See http://en.wikipedia.org/wiki/Request_for_Comments ("Not all RFCs are standards.").

traffic exchanges between them. Even the so called “standards track” RFCs suffer from this fate as, even today, there are still interoperability issues with the SIP RFC itself, and it first was published in March of 1999²⁹ and revised again in June of 2002.³⁰ Such issues have created many follow-on RFCs to address deficiencies in the original version where terms were ambiguous or descriptions incomplete,³¹ or when new implementation ideas have come forth.³²

What is worse, because of the ambiguous nature of relevant RFCs, AT&T may be able unilaterally to craft a private, proprietary protocol variation for traffic exchanges between its own TDM-based and IP-based services, even to the point of implementing some patented process (rather than a community one).³³ Indeed, the absence of standardization makes it more likely that AT&T will choose not to deal with these interconnection issues so as to advantage its own AT&T Voice Over IP Connect Service (“AVOICS”) wholesale product.³⁴

²⁹ See <http://www.ietf.org/rfc/rfc2543.txt>.

³⁰ See <http://www.ietf.org/rfc/rfc3261.txt>.

³¹ See, e.g., <https://lists.cs.columbia.edu/pipermail/sip-implementors/2009-April/022547.html>; <https://lists.cs.columbia.edu/pipermail/sip-implementors/2008-February/018567.html>; <https://lists.cs.columbia.edu/pipermail/sip-implementors/2004-July/006811.html>; and many, many others. See also, e.g., <http://bit.ly/WaXNkx>.

³² See <http://www.ietf.org/rfc/rfc6141.txt>.

³³ See <https://datatracker.ietf.org/ipr/45/>.

³⁴ See AT&T, Wholesale, AVOICS Product Offering Overview, available at <http://www.business.att.com/wholesale/Family/ip-solutions-wholesale/voip-wholesale/> (last visited Jan. 25, 2013) (“AT&T Voice Over IP Connect Service (AVOICS) offers IP-based connectivity to AT&T's network for VoIP call termination. AVOICS provides unbranded and unbundled transport over the AT&T network, as well as terminating access for native and non-native IP traffic.”). The AVOICS product brochure, available at http://www.business.att.com/content/productbrochures/AVOICS_1169.pdf, makes clear, with statements such as, “AVOICS’s rate structure is designed to help you better manage costs and accurately bill your end users,” that AVOICS is a product for AT&T’s enterprise customers and

What is required is a neutral solution to this difficult signaling problem that can be reasonably implemented by a wide variety of providers, a solution that promotes a competitive environment and provides transparent services to businesses and consumers nationwide. Experience has shown that Commission involvement accelerates the standards-development process. HyperCube therefore encourages the Commission, through the TAC and the Chief Technologist (an expert in this particular field), to play a larger role in addressing signaling concerns and promote the development of VoIP signaling standards. Such standards would ensure, for example, that consumers will continue to receive voice quality (P.01 grade) services. At this time, however, because many offerings rely on *ad hoc*, informal approaches, rather than being based on common mandatory standards, it is difficult for call flows between providers to achieve this quality.

Signaling, moreover, is not the only critical technical issue central to a seamless evolution in the communications market. For example, a recent presentation by Richard Shockey to Commission staff highlighted the need to address the software databases essential to call routing, such as the LERGTM Routing Guide, the Line Information Database (“LIDB”), the NPAC number portability database, and the 800/SMS database.³⁵

These and other pressing technical issues such as call completion, post-dial delay, and call quality cannot be resolved simply and quickly if there is a regulatory vacuum. It is important that the Commission begin now to focus on them so that possible solutions can be tried in the context of real-world experiments. Without neutral solutions to these problems, it will not

perhaps for some IXC customers. It is not designed, or appropriate, for intermediate providers that perform a crucial function in the transition of the Nation to broadband through IP.

³⁵ *Shockey Ex Parte* at 2. Mr. Shockey also supports a broad-based workshop approach to resolving technical issues raised by SIP interconnection.

be possible to implement a change-over to an all-IP environment consistent with the requirements of the Communications Act.

C. Trials Must Be Predicated on Enforcement of Statutory Interconnection Rights and Clear Interconnection Standards.

The workshop must address regulatory issues in tandem with technical issues, and the Commission must confirm before the start of the trials that it will enforce the statutory interconnection rights and obligations under Sections 251 and 252 of the Communications Act for IP-based communications services and interconnection arrangements both during the trials and on an ongoing basis. AT&T cannot simply wave a magic IP wand and make all its obligations under the Communications Act disappear, and the risks to consumers and businesses are too great for the Commission simply to acquiesce to AT&T. As NTCA has said, “[i]t is unclear whether . . . an experimental and sweeping . . . approach, where the interests of individual consumers and the terms and conditions by which networks are connected hinge largely on the discretion of individual industry participants, can satisfy the statutory cornerstones of consumer protection, competition, and universal service.”³⁶

1. Preservation of Statutory Interconnection Rights of Competitors. A key objective of the trials should be to identify the competitive requirements for effective interconnection in an all-IP environment. From a practical perspective, there is no point to a trial of the operation of even one all-IP central office if competitive providers are not assured of the same statutory interconnection rights on which such competitors rely in the current regulatory environment.³⁷

³⁶ *NTCA Petition* at 6-7; *see also NASUCA Ex Parte* at 3 (FCC rejected calls for relief from state-mandated voice service obligations).

³⁷ *Cf. CommDaily AT&T Article* (citing economist Joe Gillan’s view that it would be “‘reasonable’ for the commission to open a technical proceeding as part of an order finding that

The trials must be designed as a tool for facilitating the TDM-to-IP evolution, not as a mechanism for eliminating competition³⁸ or regulatory obligations. Indeed, as both NTCA³⁹ and TIA⁴⁰ have pointed out, without assurance of the continuation of their interconnection rights, even many ILECs will lack incentives to invest in IP-based infrastructure, or to interconnect using the IP protocol. No trial can be considered a valid experiment or a useful simulation unless the full range of service providers and technologies can and will participate. The test is not whether AT&T can interconnect with its affiliates, or complete its affiliates' calls, but whether AT&T's competitors will be able to do so in order to ensure that competitive choices will continue to exist for consumers and businesses.

IP-to-IP interconnection is subject to the Telecom Act of 1996. 'We can even 'beta-test' an Interconnection Agreement amendment to make sure that it effectively checks AT&T's market power,' said Gillan.'").

³⁸ J. Brodtkin, Ars Technica, "Vint Cerf: Internet competition has 'evaporated' since dial-up" (Jan. 8, 2013), *available at* <http://arstechnica.com/tech-policy/2013/01/vint-cerf-internet-competition-has-evaporated-since-dial-up/> (last visited Jan. 25, 2013) (citing Vint Cerf statement that "[i]f no regulation leads to your loss of choice of access to applications and content, then that is not an acceptable outcome. If that's what the telcos are trying to accomplish, I am opposed. If all they're trying to accomplish is to make sure the Internet stays as widely open as possible, and they are willing to provide competitive access and give us choice, that's another story.") *Cf.* discussion, *infra*, at 17 describing restrictions placed by AT&T Mobility on IP interconnection with non-affiliates.

³⁹ *NTCA Petition* at iii (Commission could accelerate the continuing IP evolution in the near term by confirming "*all* interconnection for the exchange of traffic subject to sections 251 and 252 is governed by the Communications Act" regardless of technology used to achieve such interconnection" and providing carrier incentives to offering IP interconnection by allowing cost recovery for costs of such traffic exchanges); *id.* at 13-14 ("Lingering uncertainty surrounding IP interconnection for the exchange of traffic that is otherwise subject to sections 251 and 252 of the Act in all respects hinders the deployment of IP-enabled networks - in fact, it would seem to create perverse technology choice incentives by *encouraging* retention of TDM-based networks (at least at the points where they interconnect with other networks) simply for the purpose of ensuring a clearer set of 'ground rules' around interconnection and intercarrier compensation.").

⁴⁰ *TIA Ex Parte* at Slide 6 ("PSTN Interconnection Rights Give Some Carriers a Perverse Incentive to Switch From IP into PSTN Protocols, in Order to Take Advantage of Their Interconnection Advantages.").

2. Implementation of Objective Standards for Mandatory IP Interconnection. In filings responding to the *Further Notice of Proposed Rulemaking* in the USF/ICC Transformation Proceeding, HyperCube recommended adoption of objective standards to ensure the availability of IP interconnection arrangements with ILECs of all sizes.⁴¹ In particular, HyperCube recommended that, at a minimum, indirect IP interconnection arrangements be universally available on request. So long as a carrier requesting interconnection has a minimum level of traffic for exchange equivalent to four T-1s, direct IP interconnection would be mandatory, because the four T-1 level has become a *de facto* industry standard for determining when such direct interconnection is cost-efficient and makes economic sense for both parties.⁴² This approach brings certainty and predictability to all parties, and it avoids prematurely requiring small ILECs to bear the costs of TDM/IP conversion before they have implemented IP protocols for their own services.

HyperCube also recommends that, consistent with Commission expectations in the *USF/ICC Transformation Order*,⁴³ the Commission encourage carriers to enter into agreement-based interconnection arrangements, backstopped by standard tariffing and interconnection procedures. As HyperCube proposed in its *FNPRM Comments*,⁴⁴ traditional interconnection

⁴¹ See, e.g., *HyperCube FNPRM Comments* at 5.

⁴² *Id.* at ii. Under HyperCube's proposal, an ILEC seeking a hardship exemption under Section 251(f), 47 U.S.C. § 251(f), would bear the burden of proof to demonstrate that such interconnection would in fact be a hardship. An ILEC's obligation to interconnect in IP format would depend on the earlier of the applicable IP transition deadline under the *USF/ICC Transformation Order*, or the date the carrier made IP-based services available to its customers. The costs of media conversion would be borne by a carrier requesting IP-format interconnection prior to the applicable deadline for the ILEC.

⁴³ *USF/ICC Transformation Order* at ¶ 812.

⁴⁴ See, e.g., *HyperCube FNPRM Comments* at ii.

agreements would be subject to standard non-discrimination and opt-in procedures, and state regulators would continue to play an important role in monitoring interconnection arrangements. Carriers would also be entitled to enter into more specialized, negotiated bilateral business arrangements that go beyond standard interconnection agreements and whose provisions are not subject to the opt-in procedure. Carriers should not, however, be permitted to provide their affiliated companies more favorable or exclusive arrangements not available to third party providers.

HyperCube thus recommends that the Commission unambiguously declare that it will enforce statutory interconnection rights for IP interconnections both during the trials and on an ongoing basis. HyperCube also recommends that the Commission include HyperCube's specific IP interconnection standards in the trial protocol. Such steps by the Commission would promote more rapid completion of IP interconnection arrangements and the implementation of innovative, market-based approaches to traffic exchanges.

D. Trials Must Cover All Types of Carrier Offices, Including AT&T Wireless Offices.

To develop useful information to guide state and federal regulators, the trials must involve all types of AT&T offices. Trials that involve only central offices self-selected by AT&T to serve its private interests will prove nothing.

1. Trials Must Include a Representative Sample of Offices of All Types Within Markets of All Sizes. The trials should involve central offices of all sizes, and the trials should include representative offices in markets of all sizes. AT&T and any other ILEC interested in participating in the trials would be required to nominate rural and suburban as well as urban market offices. The ILEC office nominations should be subject to public comment from interested parties, to ensure that the offices selected for the trials are representative of the ILEC's

offices, and that the trials cover a representative cross-section of ILEC offices nationwide. Such comments may identify potential problems affecting trials in the specific nominated offices, as well as those affecting IP interconnection arrangements more broadly. A key objective of the trials should be to develop rules that are broadly applicable in the marketplace; allowing an ILEC to unilaterally choose the trial offices necessarily distorts the experiment and is likely to diminish the yield of useful information.

2. AT&T Wireless Offices, Where Unnecessary Purchase of AVOICS Has Been Demanded, Should Also Be Part of the Trials. Further, wireless services are playing an increasing role in the broadband market, and demand for them is growing rapidly. AT&T has made its wireless offices integral to its ILEC business, and therefore AT&T's wireless offices should also be part of the trial.

In requesting that the Commission institute the trial program, AT&T has itself emphasized its planned investment in wireless broadband facilities.⁴⁵ Just as AT&T continues to leverage in the broadband marketplace the public benefits of incumbency, such as access to rights-of-way and building entry they have long enjoyed free of charge,⁴⁶ so too does AT&T continue to leverage the head start it received in the wireless market.⁴⁷ Just as there is substantial

⁴⁵ *AT&T Petition* at 9.

⁴⁶ *See NASUCA Ex Parte* at 6, 8.

⁴⁷ *See id.* at 9 (detailing concerns about the operation of the wireless market). In this context, a historical look-back may be appropriate. To encourage the development of the nascent cellular service, the Commission reserved one-half the available cellular spectrum in their territories for the ILECs. *Cellular Communications Sys.*, 86 F.C.C.2d 469, 470 n.1 (1981), *modified*, 89 F.C.C.2d (1981), *further modified*, 90 F.C.C.2d 571(1982), *petition for review dismissed sub nom. United States v. FCC*, No. 82-1526, slip op. (D.C. Cir. Mar. 3, 1983). This significantly limited the competition for substantial amounts of spectrum, and cellular-derived revenues allowed AT&T to buy even greater amounts of cellular and PCS spectrum from third parties, so that it now has a national footprint.

disagreement about AT&T's claim that it is no longer dominant in the wireline market,⁴⁸ so too is there substantial disagreement with AT&T's claim that the wireless market is fully competitive.⁴⁹

HyperCube's direct IP interconnections with all types of carriers are extensive, yet AT&T Mobility insists that intermediate providers such as HyperCube purchase an AT&T ILEC affiliate's AVOICS product in order for HyperCube to establish IP interconnectivity with AT&T Mobility. This forces intermediate providers such as HyperCube (which base their businesses on carrier-to-carrier connectivity and media conversion between TDM and IP protocols) to use an ILEC-affiliate's product that the ILEC affiliate designed to compete for the very business that HyperCube and other intermediate providers provide. It also introduces network inefficiencies and inflates costs to the ILEC's advantage, and imposition of this requirement is inconsistent with the efficiency goals of evolution to an IP-based services environment.⁵⁰

This "interconnection integration" by AT&T of its ILEC and wireless operations necessitates inclusion of AT&T Mobility offices in AT&T trials. Given the importance of the wireless market to the IP transition, AT&T's wireless offices should be part of the demonstration trials so that their special circumstances and characteristics can be considered in developing the appropriate pro-competitive technical and regulatory policies for the evolving IP telecommunications marketplace.

⁴⁸ *AT&T Ex Parte* at 6 (citing *Petition of USTelecom for Declaratory Ruling That Incumbent Local Exchange Carriers are Non-Dominant in the Provision of Switched Access Services*, WC Dkt. No. 13-3 (filed Dec. 19, 2012) for the proposition that "there is no *dominant communications service in the marketplace today*.").

⁴⁹ *NASUCA Ex Parte* at 8.

⁵⁰ Recommendation 4.10 of the National Broadband Plan is: "The FCC should clarify interconnection rights and obligations and encourage the shift to IP-to-IP interconnection where efficient." *National Broadband Plan* at 49.

E. Trials Must Be Temporary and Reversible.

Finally, it is important that the trials be just that—experimental trials. They should not be an end in themselves, or a means for an end-run around current regulatory constraints and statutory obligations, such as the interconnection obligations of Sections 251 and 252, and the obligation to obtain regulatory permission before discontinuing service under Section 214 (although Hypercube notes that the mere transition of traditional ILEC services provided over a TDM network platform to an IP network platform does not constitute discontinuance of service for purposes of Section 214).⁵¹ Whatever special regulatory dispensations may be tested during the trials,⁵² and whatever technical procedures may be adopted for experimental purposes, the affected offices should be able, and generally required, to be returned to their pre-trial status following the completion of the trial period. Only if there is consensus among trial participants and the public that there have been no adverse effects on competition, consumers, and businesses as a result the transition to an IP-based network platform in a given office, or as a result of the type of competitive interconnection arrangements made available, should regulatory dispensations be extended, and then such dispensations should be considered only after the adoption of final technical and regulatory rules for all-IP offices. All such trial offices should,

⁵¹ See *AT&T Petition* at 2 (objecting to requirements of maintaining legacy infrastructure); see also *NASUCA Ex Parte* at 7 (raising concerns about impact of elimination of Section 214 obligations on disfavored customers); *NTCA Petition* at 7 (raising concerns about regulators' ability to reverse conditions if problems arose in a deregulated environment). Enforcement of interconnection obligations during the trials should minimize the likelihood that consumers served by trial offices are not permanently disadvantaged by the experiments.

⁵² For example, the requirement for public comment on potential trial offices, and the Commission's role in selecting the offices, could be deemed sufficient under Section 214 for the FCC to waive, for the period of a trial, the requirement of a specific Section 214 ruling on proposed extensions and terminations of lines. This approach could result in a streamlined process for such 214 authorizations as a result of the trials.

moreover, become subject to the final regulatory and technical rules when they are adopted. Otherwise, consumers and businesses served by trial offices run the risk of losing services that are important to them,⁵³ and marketplace competitors run the risk of being permanently disadvantaged with respect to interconnection and call completion in important offices.⁵⁴

CONCLUSION

The Commission has recognized that the evolution to an all-IP environment will bring fundamental changes. These changes present significant risk to consumers and businesses that depend on the services provided and offered by ILECs and competitors if existing rules and regulatory policies are hastily reduced or eliminated as AT&T desires. Consumers and businesses would be harmed if hastily-reduced or eliminated rules fail to produce, or even worse reverse, the competitive successes of the Act and of existing Commission rules and regulatory policies developed and enforced over decades. Attempting to undo hastily-reduced or eliminated rules would not undo harm incurred by consumers and businesses where competitive markets disappear as a result of AT&T's new regulatory freedoms. The "smart" regulation approach advocated by NTCA, if applied to the design of regulatory trials as well as to review of existing regulations, presents far less risk to consumers and businesses, and is therefore much more prudent than the radical deregulatory approach pursued self-servingly by AT&T.

⁵³ *See NASUCA Ex Parte* at 4.

⁵⁴ *See NTCA Petition* at iii.

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